

**APPLICATION TO THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

FOR A

**GAS PIPELINE ROUTING PERMIT
AND
PARTIAL EXEMPTION FROM PIPELINE ROUTE
SELECTION PROCEDURES**

**GREATER MINNESOTA TRANSMISSION, LLC
CANNON FALLS NATURAL GAS PIPELINE PROJECT**

PUC DOCKET NO. PL-6580/GP-06-931

JULY 20, 2006



**Application for a Gas Pipeline Routing Permit
and
Partial Exemption from Pipeline Route Selection Procedures
Greater Minnesota Transmission, LLC**

Cannon Falls Natural Gas Pipeline Project

PUC docket No. PL-6580/GP-06-931

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Appendix C	Draft Agriculture Mitigation Plan



Application for Gas Pipeline Routing Permit Content Requirement and Completeness Checklist

Authority	Required Information	Location of Required Content
4415.0115	GENERAL INFORMATION.	
Subp. 1.	Cover letter. Each application must be accompanied by a cover letter signed by an authorized representative or agent of the applicant. The cover letter must specify the type, size, and general characteristics of the pipeline for which an application is submitted.	Cover Letter
Subp. 2.	Title page and table of contents. Each application must contain a title page and a complete table of contents.	Title Page and Table of Contents
Subp. 3.	Statement of ownership. Each application must include a statement of proposed ownership of the pipeline as of the day of filing and an affidavit authorizing the applicant to act on behalf of those planning to participate in the pipeline project.	Cover Letter, Section 1.3
Subp. 4.	Background information. Each application must contain the following information:	
A.	the applicant's complete name, address, and telephone number;	1.3
B.	the complete name, title, address, and telephone number of the authorized representative or agent to be contacted concerning the applicant's filing;	1.3
C.	the signatures and titles of persons authorized to sign the application, and the signature of the preparer of the application if prepared by an outside representative or agent; and	1.3
D.	a brief description of the proposed project which includes:	Section 1
(1)	general location;	1.1



(2)	planned use and purpose;	1.2
(3)	estimated cost;	1.1, 2.6
(4)	planned in-service date; and	1.4
(5)	general design and operational specifications for the type of pipeline for which an application is submitted.	1.1
4415.0120	DESCRIPTION OF PROPOSED PIPELINE AND ASSOCIATED FACILITIES.	
Subp. 1.	Pipeline design specifications. The specifications for pipeline design and construction are assumed to be in compliance with all applicable state and federal rules or regulations unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the anticipated pipeline design specifications must include but are not limited to:	2.1
A.	pipe size (outside diameter) in inches;	2.1
B.	pipe type;	2.1
C.	nominal wall thickness in inches;	2.1
D.	pipe design factor;	2.1
E.	longitudinal or seam joint factor;	2.1
F.	class location and requirements, where applicable;	2.1
G.	specified minimum yield strength in pounds per square inch; and	2.1
H.	tensile strength in pounds per square inch.	2.1
Subp. 2.	Operating pressure. Operating pressure must include:	2.2



A.	operating pressure (psig); and	2.2
B.	maximum allowable operating pressure (psig).	2.2
Subp. 3.	Description of associated facilities. For public information purposes, the applicant shall provide a general description of all pertinent associated facilities on the right-of-way.	2.3
Subp. 4.	Product capacity information. The applicant shall provide information on planned minimum and maximum design capacity or throughput in the appropriate unit of measure for the types of products shipped as defined in part 4415.0010.	2.4
Subp. 5.	Product description. The applicant shall provide a complete listing of products the pipeline is intended to ship and a list of products the pipeline is designed to transport, if different from those intended for shipping.	2.4
Subp. 6.	Material safety data sheet. For each type of product that will be shipped through the pipeline, the applicant shall provide for public information purposes the material identification, ingredients, physical data, fire and explosive data, reactivity data, occupational exposure limits, health information, emergency and first aid procedures, transportation requirements, and other known regulatory controls.	Appendix B
4415.0125	LAND REQUIREMENTS. For the proposed pipeline, the applicant shall provide the following information:	2.5
A.	permanent right-of-way length, average width, and estimated acreage;	2.5
B.	temporary right-of-way (workspace) length, estimated width, and estimated acreage;	2.5
C.	estimated range of minimum trench or ditch dimensions including bottom width, top width, depth, and cubic yards of dirt excavated;	25



D.	minimum depth of cover for state and federal requirements; and	2.5
E.	rights-of-way sharing or paralleling: type of facility in the right-of-way, and the estimated length, width, and acreage of the right-of-way.	2.5
4415.0130	PROJECT EXPANSION. If the pipeline and associated facilities are designed for expansion in the future, the applicant shall provide a description of how the proposed pipeline and associated facilities may be expanded by looping, by additional compressor and pump stations, or by other available methods.	1.2, 2.3
4415.0135	RIGHT-OF-WAY PREPARATION PROCEDURES AND CONSTRUCTION ACTIVITY SEQUENCE. Each applicant shall provide a description of the general right-of-way preparation procedures and construction activity sequence anticipated for the proposed pipeline and associated facilities.	5.1
4415.0140	LOCATION OF PREFERRED ROUTE AND DESCRIPTION OF ENVIRONMENT.	
Subp.1.	Preferred route location. The applicant must identify the preferred route for the proposed pipeline and associated facilities, on any of the following documents which must be submitted with the application:	3.1
A.	United States Geological Survey topographical maps to the scale of 1:24,000, if available;	See Item C.
B.	Minnesota Department of Transportation county highway maps; or	See Item C.
C.	aerial photos or other appropriate maps of equal or greater detail in items A and B. The maps or photos may be reduced for inclusion in the application. One full-sized set shall be provided to the PUC.	Figures 1-1 and 1-2, Appendix A
Subp. 2.	Other route locations. All other route alternatives considered by the applicant must be identified on a separate map or aerial photos or set of maps and photos or identified in correspondence or other	Section 3.4, Figure 3-1



	documents evidencing consideration of the route by the applicant.	
Subp. 3.	Description of environment. The applicant must provide a description of the existing environment along the preferred route.	Section 4
4415.0145	ENVIRONMENTAL IMPACT OF PREFERRED ROUTE. The applicant must also submit to the PUC along with the application an analysis of the potential human and environmental impacts that may be expected from pipeline right-of-way preparation and construction practices and operation and maintenance procedures. These impacts include but are not limited to the impacts for which criteria are specified in part 4415.0040 or 4415.0100.	Section 4
4415.0150	RIGHT-OF-WAY PROTECTION AND RESTORATION MEASURES.	
Subp.1.	Protection. The applicant must describe what measures will be taken to protect the right-of-way or mitigate the adverse impacts of right-of-way preparation, pipeline construction, and operation and maintenance on the human and natural environment.	Section 4, 5.1.7
Subp. 2.	Restoration. The applicant must describe what measures will be taken to restore the right-of-way and other areas adversely affected by construction of the pipeline.	5.1.7, 5.1.8
4415.0160	OPERATION AND MAINTENANCE. Pipeline operations and maintenance are assumed to be in compliance with all applicable state and federal rules or regulations, unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the applicant must provide a general description of the anticipated operation and maintenance practices planned for the proposed pipeline.	5.2
4415.0165	LIST OF GOVERNMENT AGENCIES AND PERMITS. Each application must contain a list of all the known federal, state, and local agencies or authorities and titles of the permits they issue that are required for the proposed pipeline and associated facilities.	1.5



4415.0040, Subp.3	CRITERIA FOR PARTIAL EXEMPTION FROM PIPELINE ROUTE SELECTION PROCEDURES.	
A.	human settlement, existence and density of populated areas, existing and planned future land use, and management plans;	4.1, 3.4
B.	the natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands;	4.2
C.	lands of historical, archaeological, and cultural significance;	4.3
D.	economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations;	4.3
E.	pipeline cost and accessibility;	2.6, 1.1
F.	use of existing rights-of-way and right-of-way sharing or paralleling;	2.5
G.	natural resources and features;	4.2
H.	the extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 4415.0185 for pipeline right-of-way preparation, construction, cleanup, and restoration practices;	Section 4
I.	cumulative potential effect of related or anticipated future pipeline construction; and	Section 4
J.	relevant policies, rules, and regulations of the state and federal agencies and local government land use laws including ordinances adopted under Minnesota Statutes, section 299J.05, relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.	Section 4



Acronyms and Definitions of Terms Used in this Application

Alignment: The ground plan providing the exact placement a pipeline. For the purposes of this pipeline routing permit application, “alignment” refers to the specific path and depth that the proposed gas pipeline will follow. Compare “route”.

APE: Area of potential impact, by standard protocol an area defined by a 1 mile buffer around a proposed gas pipeline.

BMP: Best management practice(s); structural, nonstructural and managerial techniques designed to reduce the quantities of pollutants from nonpoint sources.

CFR: Code of federal regulations

DOT: Department of Transportation

GMT: Greater Minnesota Transmission, LLC

GMG: Greater Minnesota Gas, Inc.

LGU: Local Government Unit

Mcf/d: Thousand cubic feet per day, a measure of pipeline capacity

MN DNR: Minnesota Department of Natural Resources

MNOPS: Minnesota Office of Pipeline Safety

MAOP: Maximum Allowable Operating Pressure

MPUC: Minnesota Public Utilities Commission

MSDS: Material safety data sheets; documents prepared by the supplier or manufacturer of a product clearly stating hazardous nature, ingredients, precautions to follow, health effects and safe handling/storage information.

NRHP: National Register of Historic Places

NRCS: U.S. Department of Agriculture’s Natural Resources Conservation Service



NWI: U.S. Fish and Wildlife Service's National Wetlands Inventory

Pipeline: pipe designed to be operated at a pressure of more than 275 pounds per square inch and to carry gas (Minnesota Rules Chapter 4415.0010, Subpart 26B).

Pipeline routing permit: the written document issued by the board to the permittee that designates a route for a pipeline and associated facilities, conditions for right-of-way preparation, construction, clean-up, and restoration.

psig: Pounds per square inch gauge; gas pressure that is measured against atmospheric pressure. This is a pressure gauge reading in which the gauge is adjusted to read zero at the surrounding atmospheric pressure.

Right-of-way: the interest in real property used or proposed to be used within a route to accommodate a pipeline and associated facilities (MN Rules Ch. 4415.0010, Subp. 31).

Route: the proposed location of a pipeline between two end points. A route may have a variable width from the minimum required for the pipeline right-of-way up to 1.25 miles (MN Rules Ch. 4415.0010, Subp. 32).

SHPO: State Historic Preservation Office

SMYS: Specified Minimum Yield Strength

Study Area: For cultural resources study, this is the area in which construction activity could take place; in this case the study area is the same as requested route width of 500 yards.

USDA: U.S. Department of Agriculture

USGS: U.S. Geological Survey



1 Introduction

1.1 Overview

Greater Minnesota Transmission, LLC (GMT) is proposing to install a 13.0 mile, 16-inch diameter high-pressure natural gas pipeline in central Dakota County. The proposed pipeline route originates at a new Northern Natural Gas (NNG) town border station (TBS) south of Coates and terminates at the proposed Invenergy Power Plant on the northwest edge of Cannon Falls in Goodhue County. As shown in Figure 1-1, the proposed pipeline route generally parallels U.S. Highway 52 through Vermillion, Hampton, and Randolph Townships in Dakota County and Cannon Falls in Goodhue County. The project title is the Cannon Falls Natural Gas Pipeline Project.

Pipeline Design

The pipeline will be capable of delivering 91,200 dekatherms of odorized natural gas per day (91,200 mcf/d, at 1,026 Btu per cubic foot). The proposed operating pressure will be no less than 650 pounds per square inch (psig) and the pipeline will be designed to a maximum allowable operating pressure (MAOP) of 800 psig. The design criteria for the pipeline also include .325" pipe wall thickness, less than 50% of specified minimum yield strength (SMYS) operation, Class 3 location design, 16-mil cathodic protection coating with rectifier protection and a single 16-inch mid-line valve for isolation. The primary purpose of the proposed pipeline is to supply natural gas to the proposed Invenergy peaking electric generation plant in Cannon Falls. The pipeline will also include three taps for possible future town border station locations. The permanent easement width will be a maximum of 60 feet, reduced to 30 feet where proximity to public rights-of-way allows for such reduction. Finally, the pipeline has a target in service of December 15, 2007 at an estimated cost of \$7.2 million.

Construction Methods

The pipeline would be installed using both open trenching and directional drilling. Directional drilling will be used to cross under the Vermillion River, U.S. Route 52, several county and township roads, and a tributary to Pine Creek, all with either a minimum of 54" of natural cover or concrete cover. These directionally-drilled sections will account for approximately 0.4 miles (2,200 feet) of the total pipeline length. The remaining 12.6 miles will be open-trench, double ditch excavation with all excavated rock removed and no trees removed.





- Preferred Route
- Preferred Route; +/- 500 yd Width
- US Highway
- State Highway
- County State Aid Highway
- Minor Road
- Perennial Stream
- Intermittent Stream
- County Boundary
- Municipality
- Civil Township



Figure 1-1

PROJECT LOCATION MAP
 Greater Minnesota Transmission, LLC
 Cannon Falls Gas Pipeline Routing
 Permit Application
 July 2006

Partial Exemption Request

Minn. Stat. Sec. 116I.015 subd. 2 provides for the partial exemption of certain routes from the pipeline routing procedures ordinarily required for a pipeline under the statute. The implementing state rule in relevant part provides that the "... (PUC) may exempt a proposed pipeline from part of the pipeline routing permit procedures ... if the (PUC) determines that the proposed pipeline will not have a significant impact on humans or the environment." Minn. Rules 4415.0020, Subp.3.

In accordance with Minn. Stat. Sec. 116I.015 subd.2, as implemented through Minn. Rules, parts 4415.0035 to 4415.0040, GMT is requesting a pipeline routing permit and a partial exemption from the pipeline routing permit procedures otherwise required under Minn. Rules Chapter 4415. This application contains the applicable information required by Minn. Rules Chapter 4415 to support a partial exemption and pipeline permit.

Route Width Request

Although the state pipeline routing rules allow a variable route width of up to 1.25 miles, GMT is requesting a route permit that allows a route width of 500 yards. This would reduce landowner uncertainty during permitting, but still allow flexibility during final pipeline design.

Agriculture Impact Mitigation and Right-of-Way Acquisition

As shown in Figure 1-2 and in more detail in Appendix A, the proposed route is located primarily on cultivated agriculture land requiring private property utility easements. Since the proposed route will impact agricultural land, GMT will work with the Minnesota Department of Agriculture, affected landowners, and the PUC to develop an agricultural mitigation plan as part of the route permit process. See Minnesota Statutes 116C.61, Subd. 3(b). A draft agriculture mitigation plan is provided as Appendix C. GMT or a representative of GMT will begin to negotiate easements with individual landowners after the PUC has issued the route permit.

1.2 Purpose

The primary purpose of the pipeline project is to provide a natural gas supply to the Invenergy Power Plant in Cannon Falls, Minnesota. The Invenergy Power Plant in Cannon Falls is proposed as a peaking electric generation unit consisting of two simple cycle combustion turbines with a total peaking capacity of 357 megawatts. The primary fuel will be natural gas with low sulfur distillate fuel oil as a backup. The Invenergy Power Plant in Cannon Falls received PUC site approval on March 30, 2005 in PUC Docket 04-85-PPS-Cannon Falls EC. The



Cannon Falls Natural Gas Pipeline Project will provide a dedicated source of fuel for the electric generation plant and will help Xcel Energy meet critical electricity demands.

GMT may also choose to use the pipeline to serve other customers in the future, but no specific customers or service areas have been identified at the time of this application filing. The proposed pipeline includes three taps for possible future town border station locations. See Section 2.3. Currently, however, there are no specific plans to expand the capacity of this pipeline or to use it to supply natural gas to additional customers.

1.3 Applicant Information

The Cannon Falls Natural Gas Pipeline Project will be constructed, owned, and operated by:

Greater Minnesota Transmission, LLC

Authorized Representative or Agent to be Contacted Concerning this Filing:

Mychael L Swan
President
Greater Minnesota Transmission, LLC
315 ½ South Minnesota Avenue
Suite 201
St. Peter, MN 56082
507.934-3411

Signature and Title of the Person Authorized

Mychael L. Swan
President
Greater Minnesota Transmission, LLC

1.4 Schedule

Construction will begin as soon as permits and rights-of-way easements have been acquired. Construction activities will be scheduled to occur during the late autumn and early winter months of 2007. This will minimize impacts to most natural resources within the project area. Greater Minnesota Transmission, LLC, has a target in service date of December 15, 2007.



1.5 Other Required Permits

This section addresses the requirements of Minnesota Rules 4415.0165 to list known permits required for the project.

The following government agency permits/approvals are required:

- The Minnesota Public Utilities Commission (PUC) requires a pipeline routing permit. Although Greater Minnesota Transmission, LLC is seeking a partial exemption from the pipeline routing process, PUC will still issue a pipeline routing permit.
- Road crossing permits will be required from the Dakota County Highway Department and the Minnesota Department of Transportation, as well as any permits required by township permitting ordinances.
- The Minnesota Pollution Control Agency will administer the nationwide storm water permit for construction activity required due to the anticipated disturbance of more than 1 acre during construction.
- A project notification will be sent to the Minnesota Office of Pipeline Safety.
- U.S. Army Corps of Engineers River Crossing Permit under Section 10 of the Rivers and Harbors Act.
- Minnesota Department of Natural Resources License to Cross Public Waters (Vermillion River and Jurisdictional Ditch #1, a tributary to Pine Creek)



2 Description of Proposed Pipeline and Associated Facilities

This section provides details of the design of the Project as they are known as of the date this application was prepared. To the extent that there are subsequent design changes, GMT will submit subsequent information filings as required under Minn. Rules 4415.0105, Subp. 3.

2.1 Pipeline Design Specifications

In accordance with Minn. Rules pt. 4415.0120 subp. 1, the following pipeline design specifications are provided for public information purposes.

- A. Nominal pipe size in inches – 16 inches
- B. Pipe type – Steel with welded joints.
- C. Nominal wall thickness in inches – 0.325 inches.
- D. Pipe design factor – the entire project is being designed to a Class 3 location design factor of less than 50% of SMYS.
- E. Longitudinal or seam joint factor – 1.00
- F. Class location and requirements – the entire length of the pipeline will be considered Class 3 for design and operation purposes.
- G. Specified minimum yield strength (SMYS) in pounds per square inch – 52,000 psig.
- H. Tensile strength in pounds per square inch – 77,000 psig.

2.2 Operating Pressure

The normal and maximum allowable operating pressures for the pipeline are:

- A. Operating pressure – 650 psig.
- B. Maximum allowable operating pressure – 800 psig



2.3 Associated Facilities

GMT plans to install an above-ground mid-line shut-off valve that will allow future full instrumented internal evaluation of the entire length of the pipeline. A distributed shallow-well rectifier will be installed on a 300 square-foot bed below ground, located near the above-ground midline valve. Above-ground instrument launch and receive stations will be installed at a later date but planned as part of the original pipeline design.

In addition, GMT plans to install three taps for future town border stations along the route. These taps would be installed to allow future distribution of natural gas to a natural gas distribution company purchasing gas from the pipeline. While no specific customers or service areas have been identified at the time of this application filing, GMT is proposing to install the taps as part of the current pipeline project in order to avoid potential additional construction and related impacts in the future.

2.4 Product Description and Capacity Information

The proposed pipeline project will be used to ship natural gas only. Material safety data sheets (MSDS) for natural gas and odorant additive are included in Appendix B.

The planned minimum and maximum design capacities of the pipeline are as follows:

- A. Planned minimum design capacity – At minimum capacity, the pipeline would ship no natural gas. Thus, the minimum planned design capacity is zero (0) thousand cubic feet of natural gas per day (0 Mcfd)
- B. Maximum design capacity – 91,200 thousand cubic feet of natural gas per day (91,200 Mcfd)

2.5 Land Requirements

Estimates of land use requirements are provided as follows:

- A. Permanent right-of-way length, average width, and estimated acreage:
 - a. The total right-of-way length is approximately 13.0 miles. The majority of the pipeline route will be in agricultural land in townships in Dakota County. The permanent easement width will be a maximum of 60 feet, reduced to 30 feet where proximity to public rights-of-way allows for such reduction. Estimated acreage within the permanent right-of-way is 78.8 acres. This total does not include the



approximately 500-foot portions of the route that will be directionally drilled under the Vermillion River and under Jurisdictional Ditch No.1 (Pine Creek tributary).

- b. Additional right-of-way in the form of road crossing permits will be needed from Mn/DOT for the Highway 52 crossing (250 feet), and for other roadway crossings (60 to 100 feet each).

B. Temporary right-of-way (workspace) length, estimated width, and estimated acreage:

Permission to use temporary workspace will be obtained from landowners adjacent to the permanent easement rights-of-way. GMT plans to obtain a general right of access to the easement right-of-way, which would include temporary workspace. This area will vary as needed but will average approximately 100 feet. The estimated acreage of temporary workspace is 157.6 acres.

C. Estimated range of minimum trench or ditch dimensions including bottom width, top width, depth, and cubic yards of dirt excavated:

- a. Estimated trench bottom width – 24 inches
- b. Estimated trench depth - 80 inches
- c. Estimated trench top width - 42 inches
- d. Estimated excavation – 63,555 cubic yards

D. Minimum depth of cover for state and federal requirements: 54 inches

A typical cross-section for the open trench section of the proposed gas pipeline is shown in Figure 2-1.

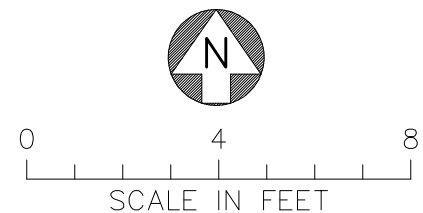
- E. The only right-of-way sharing opportunity on the proposed route is along U.S. Highway 52, where the normal 60-foot wide right-of-way could be reduced to 30-feet where feasible, as determined in consultation with Mn/DOT during permitting and final design.



2.6 Pipeline Cost

The estimated construction cost of the proposed pipeline is \$7.2 million.





TYPICAL PIPELINE CROSS SECTION—OPEN TRENCH

Greater Minnesota Transmission, LLC
Gas Pipeline Routing Permit Application
July 2006

3 Proposed Route

3.1 Proposed Route Location

The proposed gas pipeline route is shown on Figure 1-2 and in more detail on maps provided in Appendix A. From the north terminus of the project at the NNG town border station, the pipeline will be installed primarily using open-trench construction heading roughly eastward to U.S. Route 52, then turning southeast to parallel the highway for approximately one mile. The pipeline will then be directionally-drilled under U.S. Route 52. From the exit pit of the directional drill, the pipeline will be trenched parallel to the highway for approximately 0.7 mile. It will then be directionally drilled under the Vermillion River at a point just east of the confluence of the river's north and south branches. After crossing the river, the pipeline will be installed using open-trenching along a route that parallels U.S. Route 52 for approximately 1.5 miles, then further away from the highway across open agricultural fields and pasturelands southeasterly toward the southern terminus at the northwest edge of Cannon Falls. Approximately 1.6 miles northwest of the southern terminus, the pipeline will be directionally drilled under an extension of Pine Creek.

3.2 Right-of-Way Acquisition

GMT has initiated contact with local government officials. While GMT does not intend to negotiate easements with landowners prior to obtaining all governmental approvals, GMT will consult with the landowners from whom private right-of-way easements may be necessary, in order to discuss the project in detail prior to conducting any necessary surveys and soil investigations. As the route-permit process proceeds, GMT intends to continue to discuss the project with the owners of affected properties. After the PUC route permit is issued, negotiation and acquisition phase will begin in order to obtain the necessary temporary construction and permanent land or easement rights for the pipeline and associated facilities. Right-of-way requirements for the pipeline are described above in Section 2.5.

During the acquisition phase, individual property owners will be advised of construction schedules, needed access to the site and any vegetation clearing and soil stripping required for the Project. Any vegetation that is in the way of construction equipment may have to be removed. Wood from the clearing operation will be offered to the landowner or removed from the site. Brush will be chipped and disposed of on the right-of-way.

Some locations may require soil analysis to assist with the design of the pipeline. Greater Minnesota Transmission, LLC, will inform the landowners at the initial survey consultation that



these borings may occur. An independent geotechnical testing company will take and analyze borings.

Where possible, staging and lay down areas will be located within the right-of-way and limited to previously disturbed or developed areas. When additional property is temporarily required for construction, temporary limited easements will be obtained from landowners. Temporary limited easements will be limited to special construction access needs or additional staging or lay down areas required outside of the proposed transmission line private easement rights-of-way.

Finally, for cultivated agricultural land, a detailed agricultural mitigation plan will be developed as part of the Minnesota route permit process. A draft agricultural mitigation plan is provided in Appendix C. This draft will be revised in consultation with affected landowners, the Minnesota Department of Agriculture, and other regulatory agencies. See Minnesota Statutes 116C.61, Subd. 3(b).

3.3 Route Width Request

The state pipeline routing rules allow a variable route width of up to 1.25 miles. See Minnesota Rules 4415.0010, Subp. 32. However, GMT is requesting a route permit width of 500 yards. This would reduce landowner uncertainty during permitting, but still allow GMT adequate flexibility during final pipeline design. All figures showing the proposed route in this application are based on the proposed 500-yard route width.

3.4 Other Considered Routes

GMT considered a range of potential routes for the proposed pipeline prior to selecting the preferred route. The following major issues were considered:

- Minimize the number of nearby residences;
- Maximize use of public rights-of-way during construction;
- Avoid sharp turns or “kinks” in route;
- Minimize impacts on area business;
- Avoid environmentally sensitive areas, such as wetlands or tree groves;
- Use the edge of farm fields and landowner parcels wherever possible to minimize agricultural impacts and minimize impacts on potential future residential or commercial development.

One alternative route and the alternative of no action were considered, along with the proposed gas pipeline route. Descriptions of the no-action alternative and the alternative route are



described below, along with the rationales for rejecting them. The alternative route considered in detail for this project is shown in Figure 3-1.

3.4.1 No Action Alternative.

Under the No Action alternative, no new natural gas pipeline would be constructed. Not installing the proposed pipeline would of course result in no construction-related temporary impacts to agriculture or residences caused by open trenching or directional-drilling entrance and exit pits. However, under the No Action alternative, there would be no high-pressure natural gas supply available to the Invenergy Power Plant and the electric generation plant could not operate. The Invenergy electric generation peaking plant was selected in an Xcel Energy bidding process as critical to maintaining electric reliability during peak demand periods. The PUC approved the bidding process in which Xcel Energy selected this project in Xcel Energy's 2000-2014 Resource Plan docket.

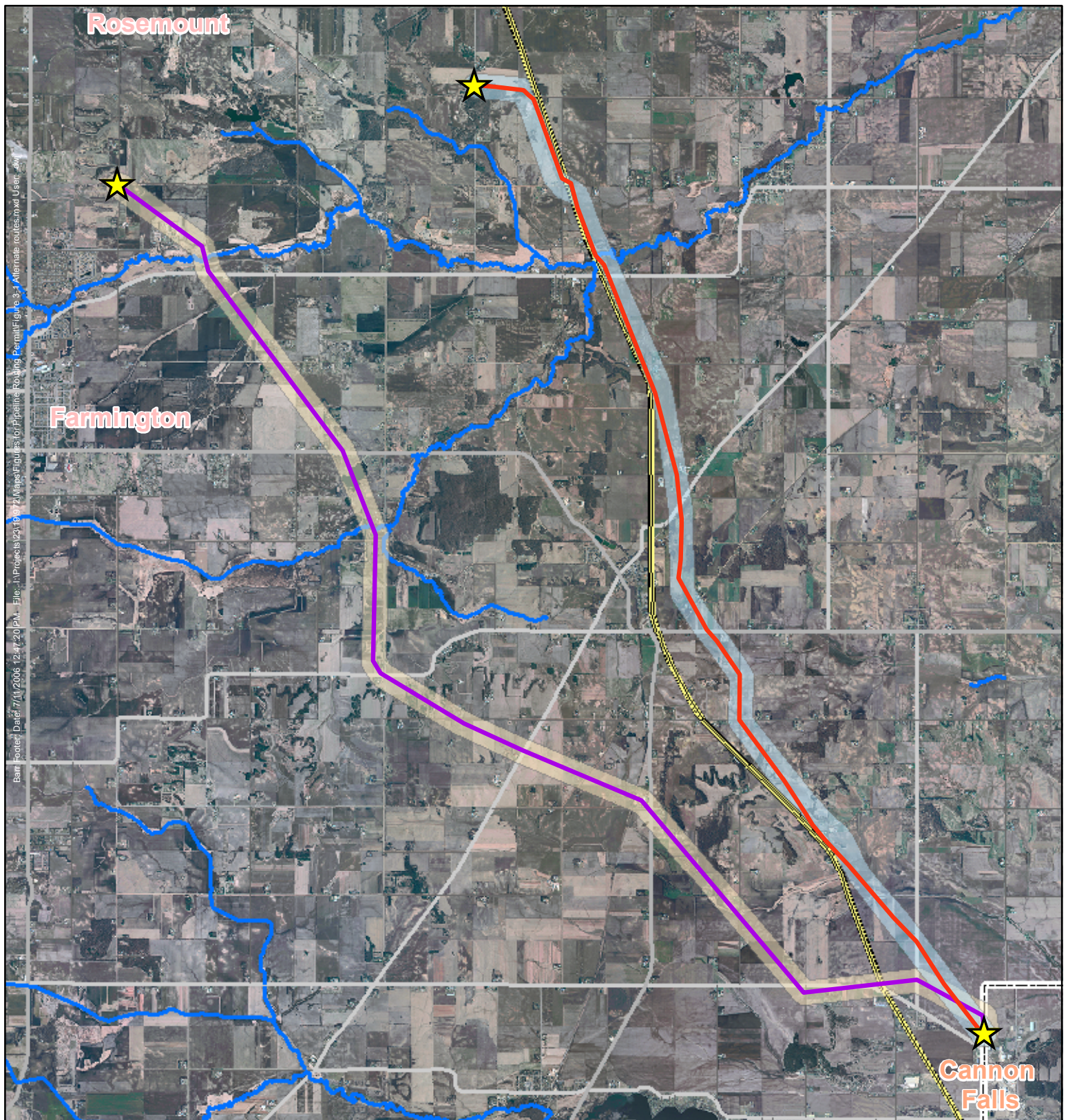
3.4.2 Alternative Route: Parallel Existing Pipeline.

The primary alternative route considered by GMT is shown in Figure 3.1. This alternative route would parallel or be installed within the right-of-way of two existing pipelines: the Magellan oil pipeline and a Northern Natural Gas pipeline. While this alternative route does allow extensive use of existing pipeline right-of-way, it has several important disadvantages:

- The alternative route has more stream crossings than the proposed route, including crossings of both branches of the Vermillion River.
- The alternative route would have to cross more wetlands. Unlike on the proposed route, some temporary and permanent wetland impacts would be unavoidable.
- There is somewhat more concentrated housing on the alternative route than along the proposed route. As a result, the alternative route would affect more landowners.
- Finally, the alternative route is longer, and so would cost more to construct. It would also cross more erosion prone land.

Therefore, on balance, the proposed route is better than other routes considered, including the alternative route that maximizes use of the existing pipeline right-of-way in the area.





Aerial Imagery: Markhurd April, 2005

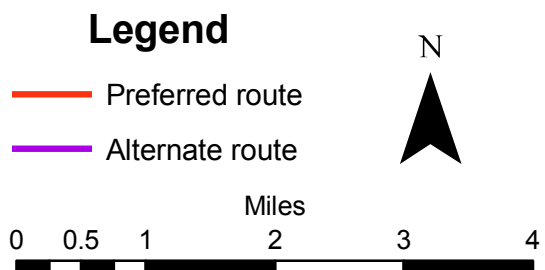


Figure 3-1
Alternate Route Considered

Greater Minnesota Transmission, LLC
Cannon Falls Gas Pipeline Routing
Permit Application
July 2006

4 Environment Information

In accordance with the requirements of Minn. Rules 4415.0145 and 4415.0040, this section also presents an analysis of the potential for human and environmental impacts from the Project. The proposed pipeline route requires placement of approximately 13 miles of 16-inch diameter gas pipeline. Construction of the pipeline will require temporary disturbance to land, crops, and vegetation. GMT will comply fully with the pipeline routing rules (Minnesota Rule 4415.0195) that will apply with right-of-way preparation, construction, cleanup and restoration.

No future pipeline construction is currently planned, although future pipelines may be constructed from one or more of the three taps included as part of this pipeline. If such pipelines are to be constructed in the future, they would be done under separate state or local approvals, as needed. Otherwise, only minimal impacts would be expected due to ongoing pipeline maintenance.

Section 1.5 of this application includes a list of known governmental permits and approvals required for the pipeline project.

4.1 Human Settlement

4.1.1 Existing Environment

The pipeline will be located primarily within private utility easements in Dakota County, crossing roads, the Vermillion River and an extension of a small creek (Pine Creek). This extension is described in this application as Judicial Ditch No. 1. From the north terminus of the project at the NNG town border station, the pipeline will be installed using open-trench construction heading roughly eastward to U.S. Route 52, then turning southeast to parallel the highway for approximately one mile. The pipeline will then be directionally-drilled under U.S. Route 52. From the exit pit of the directional drill, the pipeline will be trenched parallel to the highway for approximately 0.7 mile. It will then be directionally drilled under the Vermillion River at a point just east of the confluence of the river's north and south branches. After crossing the river, the pipeline will be installed using open-trenching along a route that parallels U.S. Route 52 for approximately 1.5 miles, then further away from the highway across open agricultural fields and pasturelands southeasterly toward the southern terminus at the northwest edge of Cannon Falls. Approximately 1.6 miles northwest of the southern terminus, the pipeline will be directionally drilled under Pine Creek.

For most of the route, the pipeline passes through areas that are primarily zoned agricultural, with commercial and industrial zoned areas at the southern terminus (Figure 4-1, Zoning).



There are approximately 40 residences located within the requested 500 foot pipeline route width.

The major traffic route in the area is US Route 52. The proposed route requires crossing this 4-lane highway only once. Other important area traffic routes include State Highway 50 southeast of the City of Hampton. No railroads or airports will be impacted by the pipeline.

4.1.2 Potential Impacts and Planned Mitigation Measures

There will be minimal impacts to human settlement from the pipeline. All adjacent and intersected streets and highways along the pipeline route will be kept open during construction. In all cases, road crossing permit requirements will be followed. Barricades, warning signs and other safety measures will be used to ensure the safety of the public during construction. Around road and driveway crossings, fencing or other types of barricading will be employed to protect public safety. Directional drilling will be used at waterway crossings to avoid wetland impacts.

GMT will consult with and work with affected landowners during permitting, final design, and easement negotiation to avoid and minimize any temporary or permanent impacts to residences, farms, or other business.

As described previously, most of the route crosses cultivated agricultural land. For cultivated agricultural land, a detailed agricultural mitigation plan will be developed as part of the route permit process. A draft agricultural mitigation plan is provided in Appendix C. This draft will be revised in consultation with affected landowners, the Minnesota Department of Agriculture, and other regulatory agencies. See Minnesota Statutes 116C.61, Subd. 3(b).

4.2 Natural Environment

4.2.1 Existing Environment

4.2.1.1 Vegetation and Wildlife

The land use in the area near the proposed pipeline route was originally transition between the eastern hardwood forests and the central prairies (Barbour and Billings 2000). Within the proposed pipeline route, pre-settlement vegetation was determined by local topography and the influence of the Vermillion River.



The area land use is now dominated by agricultural production and roads. Most of the proposed route is dominated by cultivated row cropland. Grasslands, wetlands and patches of forested areas are sparsely scattered throughout the proposed route.

The Minnesota DNR Minnesota Land Cover Classification System (MLCCS) and ground verification were used to estimate the vegetation cover types within the proposed route. The results are shown in Table 4-1 below. Cultivated row cropland accounts for nearly three-quarters of the vegetation cover types within the proposed route. Nearly all of the proposed easements will be located in cultivated areas.

Table 4-1: MLCCS vegetation cover types within proposed route

MLCCS cover #	MLCCS cover type	Total acres in route	Percent of route
11000	Artificial surfaces with trees dominant	21	0.88
12000	Artificial surfaces with coniferous and/or deciduous shrub vegetation	8	0.34
13100	Artificial surfaces with perennial grasses with sparse trees	109	4.56
13200	Artificial surfaces with perennial grasses	70	2.93
14000	Artificial surfaces with less than 25% vegetation cover	28	1.17
21000	Planted, maintained or cultivated tree vegetation	10	0.42
23000	Planted or maintained herbaceous vegetation	124	5.19
24100	Cultivated row cropland	1710	71.61
31000	Coniferous forest	11	0.46
32000	Deciduous forest	144	6.03
42000	Deciduous woodland	12	0.50
43000	Mixed coniferous-deciduous woodland	8	0.34
52000	Deciduous shrubland	11	0.46
61100	Tall upland herbaceous vegetation	12	0.50
61200	Medium-tall upland herbaceous vegetation	73	3.06
61300	Temporarily flooded herbaceous vegetation	17	0.71
62000	Grassland with sparse trees	18	0.75
91000	Rivers	2	0.08
	TOTAL	2388	100.00

The Minnesota Department of Natural Resources (MN DNR) County Biological Survey has identified four “sites of biodiversity significance” within one mile of the proposed gas pipeline route (Figure 4-3, Communities of Significant Biodiversity). One is a 16-acre site southwest of



Hampton that is rated “high” for biodiversity significance. Two other sites totaling 14.4 acres are rated “moderate”, and the remaining site within one mile of the route is rated “low” for biodiversity significance. None of these sites will be impacted by the construction or operation of the gas pipeline.

4.2.1.2 Endangered and Threatened Species

Based on a review of the U.S. Fish and Wildlife Service database, there are four federally listed species near the project area in Dakota County:

- the bald eagle (*Haliaeetus leucocephalus*),
- the Higgins eye pearly mussel (*Lampsilis higginsii*),
- the Minnesota dwarf trout lily (*Erythronium propullans*) and;
- the prairie bush clover (*Lespedeza leptostachya*).

Of these:

- No bald eagle nests are known within one mile of preferred route;
- The Higgins eye pearly mussel occurs only in the Mississippi and St. Croix rivers;
- The Minnesota dwarf trout lily tends to occur on north-facing slopes in deciduous forest, and none of this type of habitat exists on the preferred route.
- The MNDNR Natural Heritage database has no records of prairie bush clover within a mile of the preferred route. In addition, there are no undisturbed native prairie areas along the route.

A request to the MNDNR Natural Heritage database returned the following records along or within a mile of the preferred route:

- Loggerhead shrike (*Lanius ludovicianus*) – There are six MNDNR Natural Heritage database records along or near the preferred route. Medium bird that prefers grassy pastures, shrubs and small trees, fences and utility lines and poles. This bird species hunts insects, mostly grasshoppers and beetles, mice, small birds, snakes, lizards and frogs. Dakota County is in northern edge of the shrike’s breeding range. Loggerhead shrikes migrate to the area in March and April; nesting April-May; leave area September-November. The Project’s winter construction schedule will avoid impacts to shrike nesting. The Project’s underground pipeline design will have no notable impacts on shrike habitat.



- Long-bearded hawkweed (*Hieracium longipilum*) – This is a perennial plant in the Asteraceae (Compositae) that prefers dry prairies and fields. The Natural Resources Inventory conducted on the route did not identify populations of this species or suitable habitat for it.
- Plains wild indigo (*Baptisia bracteata* var. *leucophaea*) – This is a perennial prairie species that prefers well-drained native prairie. There is no high-quality native prairie on or adjacent to the route. The Natural Resources Inventory did not identify populations of this species or suitable habitat for it.

In general, the winter construction schedule will minimize or eliminate impacts to sensitive species and habitats and better-quality vegetation communities.

4.2.1.3 Geology and Soils

As shown in Figure 4-3, the surface geology in the route area consists of glacial outwash deposits, floodplain alluvium, and organic deposits. The glacial units originated from the three following sources (from earliest to latest): (1) Pre-late Wisconsinan deposits; (2) Superior Lobe deposits; and (3) Des Moines Lobe deposits. These glacial units include calcareous and non-calcareous components that make up glacial outwash sand, gravel, drift, and till. Some units contain modern and historic stream deposits that have been deposited onto floodplains during flood stage. Some of the deposits are re-deposited components of previously placed glacial deposits, creating ambiguous unit transitions in some areas. The organic deposits contain peat and organic-rich silt and clay, and include small bodies of open water. Bedrock also either outcrops, or is present within 5 feet of the surface, along both routes.

The stratigraphically lowest bedrock formation, the Jordan Sandstone (Cj), forms a bedrock valley beneath the surficial units and crosses the preferred route near the Vermillion River. This formation consists of medium- to coarse-grained, friable, quartzose sandstone. Most of the bedrock along both routes consists of the Prairie du Chien Group (Opc), which overlies the Jordan Sandstone. The Prairie du Chien group consists of karsted dolostone. The upper part is thin-bedded, while the lower part is massive to thick-bedded. Overlying the Prairie du Chien Group in some areas is the St. Peter Sandstone Formation (Osp), consisting of fine- to medium-grained quartzose sandstone. The uppermost bedrock present along both routes, directly overlying the St. Peter Sandstone, is the limestone of the Platteville Formation and shale of the Glenwood Formation (Opg).

The types and distribution of soil units within one mile of the route are shown in Figure 4-5.



4.2.1.4 Water

The proposed gas pipeline route is situated within two major watersheds: the Cannon River Watershed and the Mississippi River (Red Wing & Lake Pepin) Watershed (USDI/USGS 2000, Figure 4-8, Rivers and Lakes). Within the Cannon River Watershed, the proposed gas pipeline route crosses three minor watersheds. Within the Mississippi Watershed, the route crosses nine minor watersheds. The total area drained by these minor watersheds is approximately 193 square miles. The USGS numbers and drainage areas for the minor watersheds crossed are provided in Table 4-2 below.

**Table 4-2: Major and Minor Watersheds Crossed
by the Proposed Gas Pipeline Route**

Major Watershed Number and Name	Minor Watershed Number	Minor Watershed Drainage Area (sq. mi.)
39 - Cannon River	3901700	2.5
39 - Cannon River	3901701	20.6
39 - Cannon River	3906801	15.2
	TOTAL	38.4
38 - Mississippi R (Red Wing & Lake Pepin)	3802501	76.8
38 - Mississippi R (Red Wing & Lake Pepin)	3802600	0.7
38 - Mississippi R (Red Wing & Lake Pepin)	3802601	4.9
38 - Mississippi R (Red Wing & Lake Pepin)	3802900	23.8
38 - Mississippi R (Red Wing & Lake Pepin)	3803000	8.1
38 - Mississippi R (Red Wing & Lake Pepin)	3803100	7.9
38 - Mississippi R (Red Wing & Lake Pepin)	3803400	8.3
38 - Mississippi R (Red Wing & Lake Pepin)	3803500	9.8
38 - Mississippi R (Red Wing & Lake Pepin)	3803600	14.1
	TOTAL	154.3

The proposed gas pipeline route crosses the Vermillion River. The Vermillion River is approximately 48 miles long, and flows into the Mississippi River near Hastings. The river has a north and a south branch. The proposed gas pipeline crosses the Vermillion River just downstream of the confluence of the two branches. The pipeline crossing will be directionally drilled at a depth of approximately 16' below the river bed.

The Vermillion River is one of two designated trout streams crossed by the proposed gas pipeline route. The other is a tributary to Pine Creek that is designated Jurisdictional Ditch #1.



4.2.1.5 Wetlands and MN DNR Protected Waters

Wetlands were identified within a 1,500 foot study area around the proposed pipeline for the preferred and alternate routes. The study area exceeds the actual impact area for the project, but was selected in order to provide some flexibility in the final pipeline alignment and to provide a comprehensive evaluation of the adjacent natural resources.

Wetland areas were initially identified within the pipeline route using the National Wetland Inventory data in conjunction with the 2003 FSA aerial photographs. Wetland areas were briefly inspected in the field as possible to verify wetland boundaries and types. Based on the field observations, lines were adjusted and polygons added using ArcMap™.

Table 4-3 summarizes the acreages and types of wetland types found within the study area for the preferred route. These wetland areas are shown in Figure 4-6, and also on the detailed route maps provided in Appendix A. There are 22.9 acres of wetlands on the preferred route which included Types 1, 2 and 3. The alternate route contains 193.9 acres of wetlands that include Types 1, 2 and 3. The locations and types of wetlands are shown on Figure 4-6.

Wetlands will be avoided to the extent possible for the pipeline alignment. Wetland impacts at the Vermillion River crossing and Jurisdictional Ditch No. 1 will be avoided by using directional drilling. Therefore, there are no permanent or temporary wetland impacts anticipated anywhere on the proposed route.

Table 4-3. Preferred Route Wetland Acreage Summary.

Wetland Type (Cowardin)	Wetland Type (Circular 39)	Area (acres)
PEMA	1	1.35
PEMC	3	4.23
PEMC	3	0.23
PEMC	3	1.68
PEMC	3	2.62
PEMCd	3	7.60
PFO1A	1	1.81
PFO1C	7	2.43
PFO1C	7	0.99
PUBGx	5	1.40
Total Wetland		22.96



4.2.1.6 Recreational Lands

There are no public parks or other recreational lands within the proposed route. The nearest Dakota County park, Lake Byllesby Regional Park, is approximately 2 miles west southwest of the southern terminus of the proposed route. There are no local municipal parks within or adjacent to the route. The proposed route does cross a designated on-street bike route at Dakota County Route 47 northeast of Hampton. Impacts to this bike route will be avoided by directionally drilling under Dakota County Route 47. Moreover, construction will be scheduled during winter months when bike route usage is minimal.

4.2.2 Potential Impacts and Planned Mitigation Measures

Construction along the pipeline route will cause temporary disturbance to agriculture and residential areas, but is not expected to have long term impacts in the area. No significant long term impacts to vegetation and wildlife; geology and soils; and water resources and wetlands are expected. Best management practices (BMPs) such as silt fencing and erosion control measures will be implemented during construction to protect adjacent wetlands and to preserve soil biota in excavated areas. Top soils (approximately the top 12”) from excavated areas will be set aside separately, so that deeper spoil material can be backfilled first. As a result, the backfilled soil column will be functionally similar to its current condition in terms of seed reservoirs and nutrient distribution. Seeding with native plant species appropriate to the hydrologic regime is planned for final restoration.

Applications for the necessary wetland permits will be submitted to the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act. Construction will result in no impacts to the wetlands present within the alignment. A DNR license to cross public waters will be completed for the crossing of the Vermillion River. Directional drilling will ensure low impact crossing of the river.

4.3 Cultural and Economic Resources

4.3.1 Archeological and Historic Resources

Archaeological Resources

The 106 Group Ltd. (The 106 Group) completed a cultural resources literature review in June 2006 to evaluate known records of cultural resources within the proposed gas pipeline route. The literature review consisted of background research at the State Historic Preservation Office (SHPO) to obtain information on previously identified archaeological and sites within 1 mile (1.6 km) of the preferred and alternate alignments, as well as previously-identified architectural



history properties and previously conducted cultural resources surveys located within the project area.

SHPO records indicate that a portion of the proposed gas pipeline route was surveyed for cultural resources in 1993 as part of the Metropolitan Airports Commission for the Dakota County Airport Study. This study entailed both literature searches and field reconnaissance.

A total of 29 archaeological sites were discovered during the 1993 archaeological survey, 13 of which were pre-contact sites and 16 of which were historic archaeological sites. Four of these sites are located within one mile (1.6 km) of the GMT Pipeline study area. Of the four sites, one recorded (confirmed) site (21DK54) is located within the preferred alignment study area and three reported (not field checked) sites (21DKe, 21DKf, and 21DKaj) are located within one mile of the study area (Tables 4-4 and 4-5). In addition, four post-contact sites were identified within one mile of the preferred alignment study area (114-18-18:1, 114-19-12:1, 114-19-13:1, and 114-19-13:2); however, they have not received site numbers from the Office of the State Archaeologist (OSA).

Table 4-4
Archaeological Sites Previously Identified
Within the 500-yard Proposed Gas Pipeline Route

Site/Field No.	T	R	S	¼ Section	Description
21DK0054	114N	18W	18	C-S-SW-SW and S-S-NW-SW-SW	Lithic scatter

Table 4-5
Archaeological Sites Previously Identified
Within One Mile of the Proposed Gas Pipeline Route

Site/Field No.	T	R	S	¼ Section	Description
21DKe	114N	18W	18	NW-NW-NW	Mound
21DKf	113N	18W	8	W-NE-NE and E-NW-NE	Sod House
21DKaj	113N	18W	4	SW-SW-NW	Historic Homestead
114-18-18:1	114N	18W	18	NE	Historic Homestead
114-19-12:1	114N	19W	12	Unrecorded	Historic Homestead
114-19-13:1	114N	19W	13	Unrecorded	Historic Homestead
114-19-13:2	114N	19W	13	NW-SE	Military/Industrial Use

No archaeological sites have been recorded within the area of the alternate gas pipeline route.



Historical Resources

Research into previously-conducted architectural history surveys indicates that one property, SHPO Inventory No. DK-VM-T-017 has been previously inventoried. The site is a farmstead at 5517 210th Street (T114N, R18W, Sec 33, NW-NW-NW ¼ section). The proposed gas pipeline will not affect this property.

As part of the USACE Section 10 permitting process, GMT will conduct further research and investigation of the approved gas pipeline route to identify all known and unknown cultural resources and to determine the potential impact of the project on those resources and implement appropriate mitigation as needed.

4.3.2 Economic Impacts

There are no industrial or heavy manufacturing businesses adjacent to the proposed gas pipeline route. The principal economic activity within and adjacent to the proposed gas pipeline route is agricultural. The most economically important crops produced in the area are corn and soybeans.

Several small businesses are located adjacent to the proposed gas pipeline route along US Route 52. These include light manufacturing, garden supply and produce retail stands.

4.3.3 Potential Impacts and Planned Mitigation Measures

Archeological and Historic

The proposed gas pipeline route has been selected to minimize impacts to any buildings, including any historic structures. No major archeological sites or evidence of burial sites were found during a literature review of relevant studies in the route area. In order to ensure avoiding any impacts to historic and archaeological resources, GMT will conduct Phase 1A field evaluations of the approved route prior to construction, and will submit the final project plans to the SHPO office for review, with detailed maps of the project's area of impact, and with photographs of any nearby buildings/structures built before 1950.

Construction of the pipeline route will not have any direct impact on the cultural values of the area. The area presently has gas and oil pipelines, power lines and utility towers. Since installation of the pipeline will not change land use, no direct change in the cultural landscape will occur. However, the availability of additional natural gas supply in the area could increase the rate at which farmland in the area is converted into residential development. Nevertheless, the proposed natural gas pipeline will not likely have a large impact on residential development



rates because the demand for this development is influenced more by other factors such as population, transportation, and the strength of the local economy.

Economic Impacts and Mitigation

The purpose of the proposed pipeline is primarily to provide natural gas to an electric generation plant in Cannon Falls, a plant the PUC found to be needed by Xcel Energy to maintain reliability during peak electricity use periods. Not building the pipeline that supplies fuel to the plant would affect economic development that depends on a reliable supply of electricity.

The local economy will benefit from construction of the gas pipeline. Pipeline construction will require highly-skilled, highly paid construction workers including heavy equipment operators, pipe fitters, iron workers and other trades who will add significant payroll into the regional economy. The pipeline will contribute property taxes to Dakota and Goodhue Counties. The state and counties will also benefit from income and sales taxes paid as a result of the construction of the project.



5 Construction and Operation and Maintenance

5.1 Construction

Pipeline construction projects must be carefully planned to meet construction schedules and seasonal weather conditions. Brief summaries of the phases of pipeline construction are described below. Figure 5-1 illustrates the construction sequence for a gas pipeline. The construction schedule for the proposed gas pipeline will be designed to allow for excavation, grading and directional drilling to occur during the late autumn and early winter months of 2007. This will minimize construction-related effects on local natural resources and adjacent recreational activities.

5.1.1 Right-of-Way Preparation

The first step is to prepare the right-of-way. The right-of-way will be surveyed to assure accurate alignment and layout of the pipeline. Storage areas required for equipment, pipe, and other materials would be acquired through private permission. These areas would consist of open areas that would be fenced as deemed necessary to protect equipment and materials as well as the public.

In order to make the right-of-way into a suitable work area, a clearing, grubbing and grading crew will prepare a work area approximately 60 feet wide to allow safe and efficient operation of construction equipment. Clearing will follow accepted industry practices and sound construction guidelines. The minimum amount of aboveground vegetation and obstacles will be cleared to allow safe and efficient use of construction equipment. Debris created from right-of-way preparation will be disposed of using approved methods during construction.

The majority of the pipeline route will require minimal grading since it is relatively flat. Areas do exist however where fill will need to be added to construct a base for drilling and boring equipment. Upon completion of the project, fill will be removed and ground elevations will be returned to similar pre-construction contours. Excavation and grading will only occur where necessary to increase stability and decrease the gradient of unstable slopes. In all cases, permit conditions will be followed and met to assure minimal disturbance and impact.

5.1.2 Trenching

Conventional tracked or wheeled backhoes will be used for trenching activities. Construction mats will be employed as necessary to reduce rutting. Trench dimensions will follow normal construction techniques and all regulatory requirements. Where pipe crosses highway or road



ditches, the trench will be excavated deep enough to assure a minimum of 54 inches of cover over the pipe. All surfaced road crossings will be bored so that traffic flow will not be disturbed.

In all areas where there is a need to separate topsoil and subsoil, a two-pass trenching method will be used. The first pass will remove topsoil and the second pass would remove subsoil. Soils from each of the excavations would be placed in separate areas. Spoil banks would contain gaps to allow storm water to flow away from the construction area to prevent it from backing up or flooding. Any rocks discovered in the excavation soils over the size of 6 inches will be removed and disposed of in a manner agreed upon between the landowner and the contractor.

5.1.3 Stringing and Bending

To facilitate construction in an efficient manner, pipe will be placed along the right-of-way from a storage area or from the pipe mill, depending on delivery coordination. The pipe will be unloaded from trucks with side booms or cranes either prior to or after ditching.

After the joints of pipe are strung along the trench and before the sections of pipe are joined together, individual sections of the pipe may be bent to allow for a uniform fit of the pipeline with the varying contours of the bottom of the trench and to accommodate changes in alignment. A track mounted hydraulic pipe-bending machine is normally used when installing 16-inch pipe as is being used in this project. The number of degrees of deflection is limited to 1-½ degrees per foot per diameter inch. Greater bends will either be completed in a pipe manufacturing facility or be completed using standard weld fittings.

5.1.4 Line Up and Welding

Installation of the pipe continues with aligning the end bevels of the pipe with a line-up clamp to the proper spacing and alignment. The line-up clamps are held until enough of the weld is completed to assure weld integrity.

Welding is the joining of the individual sections of pipe to form the pipeline. A qualified welder, in accordance with welding procedures qualified to meet applicable code requirements, must perform welding. They must be periodically tested to maintain the formidable qualifications for certification of pipeline welding.

Every weld will be inspected by radiographic examination to determine the quality of the weld. Radiographic examination is a nondestructive method of inspecting the inner structure of the welds to determine if any defects are present. Defects shall be repaired or removed as outlined in



API 1104, the standard for “Welding of Pipelines and Related Facilities” which is incorporated by reference by 49 CFR 192. A certified inspection contractor unrelated to the pipeline construction contractor will perform the weld inspection.

5.1.5 Coating and Lowering-In

After welding is complete, the weld and the area around the weld will be wrapped to protect the pipe from corrosion. Side boom tractors lift the pipe and move it over the open trench. An electronic holiday detector is then used over the pipe to assure that the protective pipe coating is not damaged and will protect the pipe while underground. Any chips, gaps or other areas of inadequate coating are repaired before the pipe is lowered into the trench. When the detector determines the pipe is adequately coated, the pipe is lowered into the trench.

5.1.6 Backfilling and Testing

After the pipe has been lowered into the trench, the excavated soil will be filled back into the trench. The operation will be performed in a manner that will prevent damage to the pipe and coating from either the backfill material or the lowering equipment. Where the ditching process was used to separate topsoil and subsoil, the backfill is also be installed by placing the subsoil into the trench prior to placement of the topsoil to maintain the soil segregation. The subsoil will be compacted to as near as possible to the original density, and the topsoil will be replaced in a manner so as not to overly compact the soil. Excess backfill material will be bermed over the ditch centerline to permit natural settling, with the intent that the final ground elevations will be similar to pre-construction contours.

After backfilling, the pipeline will be tested to ensure the system is capable of withstanding the operating pressure for which it was designed. The pipeline will be filled with nitrogen gas and a pressure equal to 1.5 times the design pressure will be maintained for a minimum of eight (8) hours. Test nitrogen will be recaptured after testing is completed.

5.1.7 Clean Up and Restoration

The final phase of the pipeline construction is clean up and restoration of the right-of-way. Any surplus materials and construction debris will be removed and disposed of according to permits or local codes. Restoration of the easement rights-of-way surfaces would involve smoothing by chisel plow or disc harrow or other equipment, and stabilization where necessary. The right-of-way will be re-vegetated according to agreement with the landowner or appropriate government agency. Erosion control measures will be employed in areas with ground surface grades steeper than five to one



GMT understands that right-of-way protection, cleanup and restoration are an essential part of the Project and that the applicable requirements of Minnesota Rules 4415.0195 must be met. Conditions prescribed under those rules are as follows:

- A. The permittee shall comply with applicable state rules and regulations.*
- B. The permittee shall clear the right-of-way only to the extent necessary to assure suitable access for construction, safe operation, and maintenance of the pipeline.*
- C. Stream banks disturbed by pipeline construction must be stabilized with vegetation by the permittee using native plant species indigenous to the area or by other methods required by applicable state or federal permits or laws.*
- D. Precautions shall be taken by the permittee to protect and segregate topsoil in cultivated lands unless otherwise negotiated with the affected landowner.*
- E. Compaction of cultivated lands by the permittee must be kept to a minimum and confined to as small an area as practicable.*
- F. Precautions to protect livestock and crops must be taken by the permittee unless otherwise negotiated with the affected landowner.*
- G. All appropriate precautions to protect against pollution of the environment must be taken by the permittee.*
- H. All waste and scrap that is the product of the pipeline construction process must be removed or properly disposed of before construction ends.*
- I. Cleanup of personal litter, bottles, and paper deposited by right-of-way preparation and construction crews must be done on a daily basis.*
- J. The permittee shall repair or replace all drainage tiles broken or damaged during right-of-way preparation, construction, and maintenance activities, unless otherwise negotiated with the affected landowner.*
- K. The permittee shall repair private roads and lanes damaged when moving equipment or when obtaining access to the right-of-way, unless otherwise negotiated with the affected landowner.*



- L. The permittee shall replace or repair all fences and gates removed or damaged as a result of right-of-way preparation, construction, and restoration activities, unless otherwise negotiated with the affected landowner.*
- M. Shelterbelts and trees must be protected by the permittee to the extent possible in a manner compatible with the safe operation, maintenance, and inspection of the pipeline.*
- N. The permittee shall, to the extent possible, restore the area affected by the pipeline to the natural conditions that existed immediately before construction of the pipeline. Restoration must be compatible with the safe operation, maintenance, and inspection of the pipeline.*

5.1.8 Agricultural Mitigation Plan

As described previously, most of the route crosses cultivated agricultural land. For cultivated agricultural land, a detailed agricultural mitigation plan will be developed as part of the route permit process. A draft agricultural mitigation plan is provided in Appendix C. This draft will be revised in consultation with affected landowners, the Minnesota Department of Agriculture, and other regulatory agencies. See Minnesota Statutes 116C.61, Subd. 3(b).

5.2 Operation and Maintenance

This section addresses the requirements of Minnesota Rules 4415.0160 to provide, for public information purposes, a general description of the anticipated operation and maintenance practices planned for the proposed pipeline.

This pipeline will be built, operated and maintained under the jurisdiction of the Minnesota Office of Pipeline Safety (MNOPS). As a result, this pipeline will meet all requirements of the DOT Minimum Federal Safety Standards in Title 49 of the CFR, Part 192 (49 CFR 192). These regulations are designed to ensure adequate protection for the public from failures of natural gas pipelines and related facilities. Part 192 defines and specifies the minimum standards for operating and maintaining pipeline facilities and the establishment of an Emergency Plan, which provides written procedures to minimize hazards from a gas pipeline emergency. Key elements of the plan must include procedures for:

1. Receiving, identifying, and classifying emergency events – gas leakage, fires, explosions and natural disasters;
2. Establishing and maintaining communications with local fire, police and public officials, and coordinating emergency responses;



3. Making personnel, equipment, tools and materials available at the scene of an emergency;
4. Protecting people first and then property, and making them safe from actual or potential hazards, and
5. Emergency shutdown of the system and safely restoring service.

Specifically, the safety standards in Part 192 require each pipeline operator to:

1. Develop an emergency plan, working with local fire departments and other agencies to identify personnel to be contacted, equipment to mobilized, and procedures to be followed to respond to a hazardous condition caused by the pipeline or associated facilities;
2. Establish and maintain a liaison with the appropriate fire, police and public officials when responding to emergencies;
3. Establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a natural gas pipeline emergency and report it to appropriate public officials.

GMT currently operates natural gas pipeline facilities that are under the jurisdiction of the MNOPS and subject to the requirements of 49 CFR 192. GMT currently follows the manuals, procedures and programs of its sister company, Greater Minnesota Gas (GMG), that have been put in place to meet the requirements outlined above. Before placing the pipeline in service, these manuals, procedures and programs would be revised to include the new pipeline facilities. GMT will operate all of its pipeline facilities in compliance with applicable pipeline safety regulations.

GMT will inspect and maintain its pipeline facilities in compliance with MNOPS regulations. Semi-annual inspections of the pipeline right-of-way would be conducted for gas leak detection and cathodic protection surveys would be conducted bi-monthly. Any additional inspections or maintenance that may be required due to the new Federal Pipeline Integrity rulemaking, or any other code requirements, will be performed on the pipeline facilities.

GMG is currently a member of the Gopher State Excavators One-call system that is vital in helping to prevent damage to underground pipelines by excavators and others performing underground construction.



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